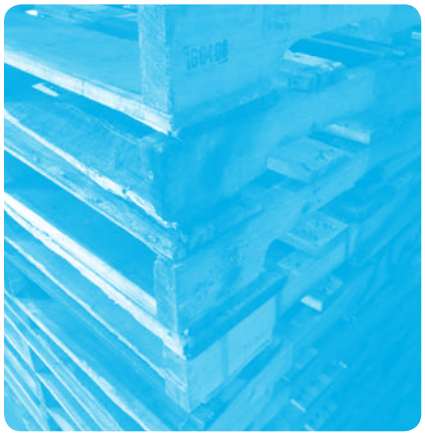

South Carolina Smart Business Recycling Program

SMART BUSINESS GUIDE

to Waste Reduction & Recycling

www.scdhec.gov/smartbusiness

South Carolina Smart Business Recycling Program

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SMART BUSINESS GUIDE

to Waste Reduction & Recycling

WHY SHOULD BUSINESSES REDUCE WASTE AND RECYCLE?

It is estimated that about 50 percent of the municipal solid waste (MSW) generated in South Carolina comes from businesses. Reducing the amount of MSW – commonly known as garbage or trash – that a business makes can have a positive impact on the bottom line – the triple bottom line, in fact.

First coined in the 1990s, the triple bottom line refers to businesses measuring its success not only in the traditional financial sense, but also its social (e.g., staff fulfillment, community involvement) and environmental value (e.g., reducing its impact on the environment).

In addition to the triple bottom line, businesses should consider implementing practices that are sustainable. The most common definition for sustainability is "meeting the needs of the present without compromising the ability of future generations to meet their own needs." Many progressive companies are adopting strategies that focus on increasing productivity and efficiency by creating better processes and products that use fewer resources, are less harmful to the environment and are more profitable.

Today, many businesses realize that by adopting a sustainable approach to conducting business, they can conserve natural resources and protect the environment. A business plan that includes sustainable efforts and resource conservation principles improves profits, creates jobs and results in other competitive advantages.

Simply put, it's smart business.

WHAT CAN THE S.C. SMART BUSINESS RECYCLING PROGRAM DO FOR YOUR BUSINESS?

The S.C. Smart Business Recycling Program (Smart Business) offers free, non-regulatory, confidential assistance to help your business in its efforts to become more sustainable. (Visit **www.scdhec.gov/smartbusiness** for details.) The program's comprehensive approach includes:

- **site visits** to assess **waste reduction, reuse** and **recycling opportunities**;
- **research and contacts for potential markets** for recovered material and industrial by-products;
- **sources of recycled-content products and sustainable service providers**;
- **educational material**, **workshops** and **employee training**;
- **an electronic newsletter** and **Web site** that includes a materials exchange;
- **case studies of companies** that are successful in diverting waste, reusing and recycling material and buying environmentally preferable products; and
- **a recognition program**.

HOW CAN YOUR BUSINESS BENEFIT?

Waste reduction and recycling not only conserve natural resources and help protect the environment, but also may benefit your business by:

- **providing cost savings** from reduced waste disposal costs and material purchase costs;
- **providing potential revenue** from the sale of recycled material; and
- **showing leadership and commitment** in your community.

INTRODUCTION ...

Waste reduction and recycling refer to activities that reduce the amount of waste for disposal.

Companies need to examine the types of waste being generated, determine if there are opportunities to reduce or prevent waste, and reuse material when possible. If there is material that can be recycled, programs should be established and outlets found so that these items can be converted into new products.

GETTING STARTED ...

There is no "one-size-fits-all" approach to waste management. It is important to remember that there is a cost to manage solid waste – whether through recycling or disposal. The cost to recycle, in general, can be less expensive than the cost of disposal.

Here are some key steps in starting a waste reduction and recycling program.

1. **Secure support from top management.**
2. **Form a Green Team.**
3. **Analyze the current waste stream.**
4. **Identify waste reduction and recycling opportunities.**
5. **Design a program and acquire equipment.**
6. **Educate employees about the new waste reduction/recycling program.**
7. **Launch the program.**
8. **Review and improve the program.**
9. **Report recycling efforts.**

After implementing a waste reduction/recycling program, a business should adopt strategies to buy supplies and products that are made from recycled material to sustain markets and ensure that recycling programs can succeed.

STEP 1 | SECURE MANAGEMENT SUPPORT.

A waste reduction/recycling program is usually most successful with the support of top management.

Endorsements from management are critical as program goals are announced and a collection program begins. Employees must feel that it is part of the "corporate culture" before they will change their behavior.

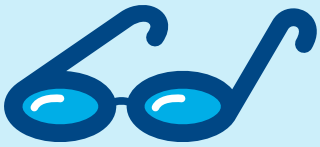
STEP 2 | FORM A GREEN TEAM.

Once you have gained support from management, it is critical to get representatives from all areas of the organization to share their ideas and opinions about how to reduce waste and recycle more. After all, they are the ones who know their job best and can give the most reliable information about the material they use. This team is responsible for planning, implementing and maintaining the waste reduction and recycling program.

The team members also serve as ambassadors for the program in their respective departments, providing a structure for communicating the program's goals and objectives as well as successes to their peers.

A waste reduction and recycling coordinator should be selected to serve as the liaison between top management and the Green Team.

WHY LOOK AT WASTE MANAGEMENT?



Waste management is the collection, removal and proper handling of material generated as part of daily operations. The adoption of an integrated waste management system – one that includes both recycling and disposal – by businesses is typically the result of several factors.

Waste disposal expenses increase when the amount of waste being generated increases. Environmental concerns and the complexity of managing certain types of waste also can affect disposal costs. With the need to boost profits, many companies have looked for ways to reduce the cost of managing their waste.

STEP 3 | ANALYZE THE CURRENT SOLID WASTE SYSTEM.

The first step in considering waste reduction and recycling options is to understand the current waste management system and practices as well as identify the amount and types of waste generated.

It also is important to note how the business' operations impact the waste management system and how the waste management system can impact business operations. There are several strategies that can be used to learn more about the waste management system.

▶ EXAMINE FACILITY RECORDS.

Examining records can provide insight into waste generation and removal patterns as well as material brought into the facility. The types of records that can provide useful information include:

- **purchasing records**;
- **supply, equipment and maintenance records**;
- **equipment service contracts**;
- **repair invoices**; and
- **waste hauling/recycling service records and contracts**.

▶ CONDUCT A FACILITY WALK-THROUGH.

A facility walk-through can spur simple yet effective waste reduction and recycling ideas. Green Team members can walk through the facility and make careful observations about the operations and waste management systems in each area, noting:

- **the layout and operations** of various departments;
- **the types and relative amounts** of waste generated;
- **inefficiencies in operations** that might result in excess waste;
- **existing waste and recycling equipment** (and the adequacy of such equipment); and
- **current waste reduction and recycling efforts** (and any possible improvements to existing programs).

As part of the walk-through, consider performing a visual audit of each work area to observe waste-generating activities. Mark observations on Worksheet A (page 16) in the Appendix.

Conducting visual audits involves looking into trash cans and dumpsters and making estimates of the amounts and types of waste generated. While not as thorough as a waste sort, visual audits are a good option when time is limited. Additional information can be obtained through interviews with supervisors and employees.

▶ CONDUCT A WASTE AUDIT.

Invaluable information can be gained by examining the types of waste being disposed of and recycled through a waste audit, also known as a waste sort. An audit:

- involves **physical collection, sorting and weighing** of a business' waste;
- **allows for examination of current waste reduction and recycling practices** and to quantify their effectiveness;
- **establishes a baseline** of data by collecting background information (e.g., current purchasing, waste generation, management practices); and
- **identifies potential waste reduction and recycling options** for further evaluation.

A waste audit can focus on the entire business' waste or can target certain work areas.

It is important to conduct a waste audit when waste is representative of typical business activities. If waste generation varies significantly from one day to the next, thereby distorting results, consider sorting waste on more than one day.

WASTE AUDIT SUPPLIES ...

- ✓ **Rubber gloves**
- ✓ **Several cardboard boxes**
- ✓ **Scale**
- ✓ **Camera** (digital or video)
- ✓ **Plastic trash bags**
- ✓ **Broom/shovel and dustpan**
- ✓ **Clipboard, pens/markers**
- ✓ **"Conducting a Waste Sort" Worksheet C** (provided in the Appendix)
- ✓ **First aid kit**
- ✓ **Plastic sheeting/drop cloth**

***REMEMBER** to wear old clothes, long pants, long sleeves and closed-toe shoes.*

Use "Conducting a Waste Audit" Worksheet C (page 21) to obtain a complete assessment of the types and amounts of waste being generated. This includes:

- **locating all waste collection areas**;
- **sorting and weighing the contents** of each container; and
- **calculating percentages by material type** for the waste stream during the sample period.

Conducting a waste sort based on **sampling** involves the following steps.

- **Obtain representative samples of the waste.** If there are several departments and/or buildings, be sure they are all represented during the sampling process. Each sample should be clearly identified upon collection and recorded according to the point of generation – particularly if different functions are performed in each department or building.
- **Sort the waste by material type** – such as white paper, mixed paper, plastic bottles, aluminum cans, glass, metal, corrugated cardboard and food scraps.
- **Evaluate the quality of the material collected.** Is it marketable in its current condition or would change need to occur (e.g., bound materials, shredded paper, containers that still have liquid or other contents in them)?
- **Weigh each category separately** and record results.
- **Obtain information regarding the amount of waste disposed of over the sample period.** Waste hauling companies that offer garbage service can generally provide this information.

▶ ANALYZE WASTE AUDIT RESULTS

Now that the Green Team has a better understanding of what type of waste the business is generating, it is better equipped to determine what steps need to be taken to reduce, reuse and recycle.

See the five-step approach on the following page.

LARGE VS. SMALL BUSINESSES

Businesses of different sizes may choose to approach waste audits differently. Small businesses, for example, can often examine a full day's worth of waste. If an entire day's worth of waste is being sorted, ask housekeeping to place all waste gathered for the sort in one location, far enough from the dumpsters so that the waste hauler will not collect it.

Staff should collect one work day's worth of waste from:

- **individual workstations/offices**;
- **common-use areas**;
- **meeting rooms**;
- **cafeterias/break rooms**;
- **outside waste containers**; and
- **other identified areas**.

Larger businesses can examine a representative sample of waste, rather than an entire day's worth of waste. It is suggested that a sample size of about 50 pounds of waste be removed from each dumpster. As with the more comprehensive method, make sure the day of the sort also is representative.

1. GET THE FACTS.

Use the results of the waste audit to determine which waste streams can be prevented, reduced, reused or recycled and which waste streams still may need to be disposed of at a landfill.

2. INVOLVE STAFF.

Encourage all employees to participate in the waste reduction and recycling program in order to achieve the best results. Ask employees for their ideas about ways to reduce waste. Use occasional department meetings to brainstorm about waste prevention and recycling opportunities.

Once the plan is in place, all employees and managers must be educated about waste reduction and recycling processes. Keep them informed and involved at all steps in the development and implementation of the program. Employees can be a valuable resource in identifying ways to improve the program.

3. PLAN THOROUGHLY.

Begin by prioritizing the components of the waste stream for action. Ideally, every component will be targeted for reduction/recycling, but in the beginning, it is best to concentrate on the material that makes up the greatest portion of the waste stream. When identifying material to target, ask the following questions.

a. **How much is generated?**

b. **Can the waste be reduced or recycled?**

c. **Are there regulations or state laws** (e.g., landfill bans) **that need to be considered?**

d. **What are the economic factors at play? Are there cost savings from reducing waste?**

e. **Are markets available for your material? Do recycling revenues exist?**

4. DETERMINE COSTS.

In order to determine the success of a waste reduction and recycling program, it is important to know the current costs of managing the waste being generated. To identify current waste management costs:

a. **add together garbage bills and recycling services** (including confidential destruction costs);

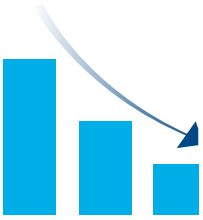
b. **subtract revenue from current recycling programs, if applicable**. Many businesses will not experience revenue earnings. In fact, there can be a cost for recycling services, but typically it may be the same or less than disposal services; and

c. **the sum equals the total net waste management cost.**

5. FOCUS ON RESULTS.

Establishing a record-keeping system for the amount of material recycled and disposed of allows a business to track the effectiveness of its waste reduction and recycling program. As a result of implementation, a business may experience savings in waste disposal fees because it has diverted material for recycling. This could result in reducing the number of times garbage containers are emptied. Labor costs for collecting, preparing and storing the recyclables, however, may increase operating expenses. By recording these measures, a business can see if the program is economically beneficial. It is, however, important to point out that most companies are not going to make large profits based on recycling programs. In all cases, it is important to consider the savings from avoided disposal costs when waste reduction and recycling programs are implemented. It also is worth noting that waste management costs tend to rise over time and an investment made now to reduce waste is likely to reap benefits and savings in the future. Ultimately, the success of a program should be measured by the amount and quality of waste diverted from disposal. If a building is leased and garbage disposal is part of the monthly rent, check to see if the landlord will offer a discount if disposal expenses are reduced through waste reduction and recycling efforts.

STEP 4 | IDENTIFY WASTE REDUCTION AND RECYCLING OPPORTUNITIES.



Now that the Green Team has gathered information about the amounts and types of waste generated, the team can select appropriate waste reduction and recycling measures to implement.

The elimination or reduction of waste requiring disposal can occur through one or more of the following methods, listed in order of priority:

- **SOURCE REDUCTION** – avoiding generation of waste altogether.
- **REUSE** – the ability to use a material again in its original form; and
- **RECYCLING** – the ability to use a material again to make another product.

▶ IDENTIFY SOURCE REDUCTION OPPORTUNITIES.

There are many source reduction activities that can be implemented at work. Some activities might be able to be implemented by individuals directly, while others would require the business to initiate the strategy.

Examples of individual source reduction strategies include using reusable mugs as well as utensils and plates (instead of disposables) or avoiding printing documents. Examples of strategies that would require business implementation include working with suppliers to ensure that reusable containers are used to ship supplies, such as plastic containers rather than cardboard boxes or installation of hand dryers instead of using paper towels in rest rooms.

List all potential source reduction opportunities, what would be required to implement them and estimate the amount of waste that could potentially be avoided.

▶ IDENTIFY REUSE OPPORTUNITIES.

Reusing material is generally a more cost-effective and environmentally beneficial strategy than recycling it. Again, some reuse strategies may be easy for individuals to start without company intervention, but other strategies may require corporate action. For example, individuals can use the back side of paper for notes. Businesses could identify material for reuse for feedstock via material exchanges or donation.

Using information gathered about the waste generation and management practices, the Green Team can list all potential reuse strategies, what would be required for implementation and estimate the amount of waste that could potentially be reduced through reuse activities.

▶ IDENTIFY RECYCLING OPPORTUNITIES.

After the Green Team has evaluated source reduction and reuse options, the next step is to identify opportunities for recyclables that are generated on-site.

When targeting material to recycle, the Green Team will want to consider the following factors:

- **prevalence of material** in the waste stream;
- **ability to recover the material** in a marketable form;

▶ POTENTIAL REVENUE ...

For some large businesses and industries, another consideration when targeting specific material to recycle is the potential revenue earned from the sale of material as well as the stability of markets. This applies especially to businesses and industries that bale or otherwise prepare the recyclables. Markets for collected recyclables tend to be dynamic and can vary by region.

Market pricing information is available online and through published sources. Interviewing local recyclers or end users by telephone and possibly inviting a few to visit will provide valuable information that will help identify material to recycle.

Local recycling haulers also can help guide this decision, as they can provide information about markets.

- **ease/cost of recycling program implementation**; and
- **availability of markets** for the material.

The Green Team might consider targeting one or two types of material to start, then gradually add more types of material as the program matures. Confidential waste (such as shredded documents) should not be overlooked.

RECYCLING LIST

- ❒ Choose containers based on location (from deskside to outside) for each commodity.
- ❒ Identify who will take recycled material from point of generation (e.g., deskside recycling bin) to point of collection (e.g., outside container).
- ❒ Work with vendors to ensure containers and levels of sorting are appropriate.

▶ IDENTIFY REQUIRED COLLECTION SYSTEMS.

There are many ways to collect recyclable material in the workplace. Decisions will have to be made regarding the type of material to be recycled, the type of program that is required and the preferred level of employee participation.

For each type of material targeted for recycling, determine a source separation method and how the material will be moved from point of generation to the designated point of collection. Separation of recyclables by the employee at the point of generation (such as using a desk-side bin at an employee work station) is usually an efficient and successful way of diverting recyclables. Having the employees empty these containers into an intermediate container may simplify the collection process for custodial staff.

▶ FREIGHTLINER CUSTOM CHASSIS CORPORATION ...

SPOTLIGHT BUSINESS

... (or FCCC) in Gaffney has made a strong commitment to reducing waste and increasing recycling. In 2007, FCCC was selected as the pilot plant for Daimler Trucks North America's Zero Waste to Landfill initiative, an effort that was to be met by 2010. In two years, FCCC achieved its goal, three months ahead of schedule.

Several steps were taken to reach this significant achievement. First, FCCC established a "green team" and launched its internal environmental Web page to educate and motivate employees. Next, FCCC added recycling centers within its canteen and break areas. Staff visited Subaru of Indiana to review its waste reduction program and worked with contractors to finalize details for additional recycling options for the remaining waste stream. FCCC also initiated their plastic and rubber recycling program. Finally, FCCC provides guidance to other Daimler Trucks North America plants on waste reduction and recycling efforts.

Within a year of launching the initiative, FCCC was 94.1 percent landfill free – recycling everything from plastic bottles and cardboard to plastic tie bands and nylon hoses. This effort kept more than 4 million pounds of material out of the landfill. In addition, these efforts produced a 37 percent decrease in waste disposal costs.

Success was reached in October 2009 when FCCC achieved its goal of being landfill free. By replacing hundreds of large trash cans with smaller recycling containers, productivity and morale have improved.

FCCC is a partner of the U.S. Environmental Protection Agency's WasteWise Program and a member of the S.C. Environmental Excellence Program. In addition, FCCC is a recipient of the S.C. Department of Health and Environmental Control's Earth Day Award.

Custodial or maintenance staff often then transport the recyclables from the intermediate containers to a staging or loading area. Integrating recyclables collection with garbage collection is usually a logical method of collecting and consolidating material.

▶ ASSESS STORAGE AND EQUIPMENT REQUIREMENTS.

Based on the quantity of recyclable material identified in the waste audit, determine the space needed for storing each type of recyclable between pick ups.

When making your assessment, consider:

- **varying pick-up times by recycling vendors** as well as vendor-specific minimum collection volumes;
- **security access to loading docks**; and
- **required material handling equipment**.

▶ EVALUATE RECYCLERS/ LOCAL MARKETS FOR RECYCLABLES.

It is best to interview a number of potential service providers, assuming more than one exists in the area. In some cases, local governments provide access to recycling programs – either through the use of drop-off sites or collection services.

Check with your county or city recycling coordinator to see what services may be offered. To identify your local coordinator, visit **www.scdhec.gov/recycle** and click on RECYCLING WHERE YOU LIVE.

▶ LOCATION. LOCATION. LOCATION.

Always place recycling containers next to trash cans. This reminds users that there is a choice and prevents a recycling container from turning into a trash can.

Work with your hauler to understand which types of collection containers are compatible with their collection vehicles.

Every recycler differs slightly in the services they provide, the cost of collection, etc. Some large businesses deal directly with single-item processors (e.g., paper, metal). This requires a greater level of effort, but can result in higher revenue earning potential.

If you bale material prior to marketing, research current prices, historical trends and growth potential for the recyclable material in the waste stream. The S.C. Smart Business Recycling Program can provide much of this information. Visit **www.scdhec.gov/smartbusiness** or call **1-800-768-7348** for details.

Also, contact local haulers/processors of recyclables to identify:

- **material accepted** (and/or volume requirements);
- **service fees**;
- **collection schedules**;
- **equipment supplied**; and
- **potential revenue sharing options**.

Many recycling service providers will visit facilities to help plan the logistics of a recycling program.

EVALUATING RECYCLING OPTIONS

When evaluating recycling options, consider the following:

- ✓ **compatibility with current way of doing business**;
- ✓ **equipment requirements**;
- ✓ **space/storage requirements**;
- ✓ **staffing, training and/or education requirements**;
- ✓ **implementation time**;
- ✓ **cost vs. potential savings**; and
- ✓ **impacts on employee morale, environmental awareness and community relations**.

▶ REVIEW CURRENT HAULING CONTRACTS.

As the Green Team researches recycling options, it will want to review current service provider contracts for garbage to ensure that program changes will not violate the contract if waste quantities drop below a certain volume. In some cases, businesses do not have a hauling contract and in other cases contracts are in place for 25 years.

Be aware of the details in your waste disposal contract. Some hauler contracts have "evergreen clauses" which automatically renew your contract after a specified period of time if you do not cancel it. Confirmation from your company may not be required. Use Worksheet B (page 19) in the Appendix to learn more about the current contract that is in place at your business.

▶ EVALUATE AND SELECT PROGRAM OPTIONS.

Evaluation and program design (in Step 5) are often conducted simultaneously so that cost estimates can be more accurate. In evaluating and selecting program options, businesses should estimate and analyze:

- **the quantity and types of waste** that are expected to be reduced;
- **capital costs** (material moving and storage equipment, containers);
- **ongoing operating costs** (any added labor, hauling, container rental, expenses associated with education and outreach such as labor and printing, implementing and tracking program success, etc.);
- **estimated cost savings** (avoided disposal costs); and
- **estimated revenues** from the sale of recyclables (if applicable).

Next, meet with upper management and obtain implementation approval. Show the quantitative and qualitative benefits of the program. Point out the goals and mission statement the program aims to support.

STEP 5 | DESIGN PROGRAM AND ACQUIRE EQUIPMENT.

After the Green Team has conducted a waste audit, identified areas where improvements can be made and obtained support from management, the next step is to design the waste reduction and recycling program and prepare for implementation. As previously mentioned, many of the program design tasks will have been completed during the waste audit.

As part of the program design stage, the team will:

- **identify container locations**;
- **select and purchase recycling containers** including point-of-generation, intermediate and depending on vendor requirements, point-of-collection containers (See page 11 for details.);
- **design an internal collection and routing schedule**;
- **purchase any required material handling equipment** (e.g., dollies, balers, carts, bins, shredders, etc.);
- **ensure storage space is adequate**;
- **determine collection frequency** (based on expected volume, number as well as size of containers and hauler requirements);

▶ SEW EURODRIVE ...

… (or SEW) – a manufacturing plant in Lyman that produces motors – is committed to environmental excellence and sustainability. Recently, SEW strengthened that commitment by making some simple, yet effective operational changes. Previously, SEW purchased packing material and recycled its excess cardboard – both at a cost to the company. By purchasing a cardboard shredder for $7,000, the company was able to recoup its expense within 10 days by using the shredded cardboard in place of the purchased packing material when shipping its product. Following the waste hierarchy of solid waste management – source reduction, reuse and recycling – SEW Eurodrive found reuse options for its material and saved money in the process.

SPOTLIGHT BUSINESS

- **establish contract(s) with service provider(s)** (Contracts should be mutually beneficial for the vendor and the business. Be aware that changes to the contract may incur additional charges.);
- **establish a monitoring system** (Decide who will monitor quality and quantity of material recovered. Audit containers regularly to address issues quickly and ensure employees know who to contact with ideas and questions.); and
- **schedule program roll out** after all needed equipment and containers have arrived. (Distribute promotional material just before program roll out. Consider phasing in the program by starting with one or two recyclables or departments and adding more over time).

EXAMPLES OF RECYCLING COLLECTION CONTAINERS ...

POINT-OF-GENERATION (DESK-SIDE) CONTAINERS

PURPOSE: For depositing recyclable material where it is first generated.

40 X 25 X 18-inch clear container

28-quart paper recycling bin with 4-quart trash can

4-gallon tote bag

INTERMEDIATE (RECYCLING) CONTAINERS

PURPOSE: For consolidating material into fewer, centrally located containers.

64-gallon roll cart

18-gallon recycling bin

1/2-cubic yard "gravy boat" container

POINT-OF-COLLECTION CONTAINERS

PURPOSE: To consolidate all material for pickup at one outdoor location to be taken to a recycling facility.

10-cubic-yard container

Divided 40-cubic-yard roll-off container

6 X 9-foot metal trailer with 5-foot sides

STEP 6 | EDUCATE AND PROMOTE.

Promoting the waste reduction and recycling program helps ensure that employees are knowledgeable about the program and motivated to participate. There are several possible options to promote the program.

▶ DESIGN AND DEVELOP EDUCATIONAL AND PROMOTIONAL MATERIAL.

- **Design program logos, slogans, posters, stickers and perhaps other material** that will encourage colleagues to recycle.
- **Order the material ahead of time** so they will be available before the launch date.
- **Ensure that senior management's commitment to the program is incorporated in the program launch**.

▶ PLAN AND SCHEDULE TRAINING SESSIONS.

Training is critical to the success of waste reduction and recycling programs. It will make employees aware of the program and will encourage responsibility as well as foster pride in the company's goals.

- **Have each Green Team member directly involved in training** to spread enthusiasm and to sell the program.
- **Develop a short presentation** about how the program works. Initial sessions should be conducted just before the launch date. It should include descriptions and benefits of the source reduction, reuse and recycling opportunities as well as contact information.
- **Work through senior management** to ensure that all new employees are informed about the waste reduction and recycling program as well as their expected role in the program. This can be accomplished through new employee orientation.

In addition to promotional and educational efforts to encourage participation and communicate program details, it is important to promote program successes. For example, educating employees on the amount of material recycled and the cost savings realized may motivate them to recycle more.

STEP 7 | LAUNCH THE PROGRAM.

After all of the analysis, evaluation and design, the Green Team is ready to launch the program. The following activities can help ensure a successful program launch.

▶ PROMOTE PROGRAM LAUNCH.

A kick-off event can be a great way to introduce employees to the program and generate enthusiasm as well as review program details. This can be a stand-alone event, or held in conjunction with a related environmental event (such as America Recycles Day, November 15 or Earth Day, April 22).

Remind staff about the program launch by creating posters, table tents and fact sheets as reminders of the

WORKING WITH CUSTODIAL STAFF ...

It is important to identify who will be moving the material collected in your facility. Often custodial staff (in-house or contracted) are relied upon to complete this task.

It is important that they understand the recycling program. Training is key to the program's success. Make training sessions relatively short and efficient – lasting no more than 10 minutes at the beginning of a shift. A detailed procedure sheet also can be developed for the custodial staff. The procedure sheet should explain details about what material is recycled, how it is collected and where to place material for collection. The procedure sheets should be double-sided – English on one side and a second language (as appropriate) on the other side – and laminated to ensure their longevity.

After an initial training, schedule a follow-up meeting a few months later to provide an opportunity to receive feedback. The feedback can subsequently be used as possible action items to improve recycling procedures.

SOURCE: Matt Todd, "Left Out in the Cold," *Resource Recycling,* April 2008, pp. 43-45.

program's start date and how to participate as well as having top management send an e-mail and/or make an announcement reminding employees when the program will begin.

▶ ENSURE SYSTEMS AND PROCEDURES ARE IN PLACE.

Before launching the program, ensure all of the following elements are in place.

- ✓ **Containers are situated according to the plan** and any workstation containers have been distributed.
- ✓ **Any necessary stickers are on containers and educational posters are displayed** (consider bilingual material, if necessary).
- ✓ **Custodial services have a floor plan** indicating container locations.
- ✓ **Custodial services are trained** regarding the program.
- ✓ **A contract or service agreement has been established** with the recycling service provider(s), including price and schedule.
- ✓ **A system is in place for the Green Team to monitor and record the success of the program** as well as to provide feedback.
- ✓ **Employees have been trained on the basics of recycling** and have Green Team contact information if they have questions.
- ✓ **A method of sharing program results with all participants** has been established.

KEEPING YOUR PROGRAM ON TRACK ...

- ❒ **Develop dynamic education and outreach ideas.**
- ❒ **Determine phase-in schedule for these activities.**
- ❒ **Solicit feedback from staff.**
- ❒ **Keep in contact with vendors.**
- ❒ **Track program results and report annually to your county recycling coordinator.**
- ❒ **Solve any issues as they arise.**
- ❒ **Keep upper management apprised of program successes.**

▶ DISTRIBUTE POINT-OF-GENERATION RECYCLING RECEPTACLES AND PLACE INTERMEDIATE CONTAINERS.

After training has taken place, ensure that point-of-generation recycling containers are distributed to individuals to place at their workstations and in common areas as planned.

If employees will be required to empty their desk-side containers, remind them of this when the Green Team distributes the containers. Let them know where to empty the containers.

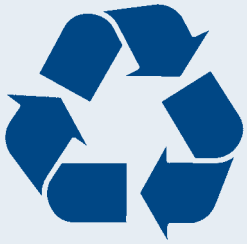
▶ AFTER COLLECTION BEGINS, MONITOR THE RESULTS.

Monitoring the program at the start is crucial to ensure that the program runs smoothly.

For example, it would be beneficial for Green Team members to:

- **monitor the volume collected** (see how it compares to predicted volumes);
- **maintain accurate records** so that financial information can be presented to upper management, when assessing program success;
- **monitor the quality of material in collection containers from point of generation to point of collection** so that any issues can be resolved; and
- **monitor the trash containers** to observe what material is not being recycled or in what parts of each facility it is not being recovered, so that appropriate education and outreach follow-up activities can be implemented.

'CLOSING THE LOOP'



The chasing arrows or mobius represent the **THREE STEPS** in recycling:

1. **collecting and processing recyclables**;
2. **manufacturing them into new products**; and
3. **purchasing products made with recycled content** (which "closes the loop").

STEP 8 | REVIEW AND IMPROVE THE PROGRAM.

During the planning phase, the Green Team will have decided how to measure success – including what variables to examine, what data to record and how to monitor the program and track progress. Regular monitoring (and recording of observations) will help the Green Team assess the program's effectiveness. Also, once the potential for reducing waste in the business becomes better understood, consider establishing long-term goals for the program to ensure its sustainability.

It is important to evaluate the program periodically to:

- **keep track of program successes** and build on that success (e.g., amount of waste reduced and recycled, money saved, etc.);
- **think of new ideas** for reducing waste;
- **look for areas needing improvement;**
- **identify new recyclables** to add to the program;
- **document compliance** with state or local regulations;
- **determine the effect of any new additions** to the program; and
- **keep employees informed and motivated.**

▶ COMMUNICATE WITH PROGRAM PARTICIPANTS AND VENDORS.

Work with collection crews, Green Team members and participants to identify and adjust for any problems that may arise, especially in the program's start-up phase. Keep in close contact with vendors regarding the quality of material, pick-up frequency, container size and other issues.

Encourage employees to ask questions, report issues and suggest improvements by developing a system to receive continuous feedback. This will help fine-tune the program as well as lead to increased ownership in the program.

▶ DEVELOP AN ONGOING EDUCATION AND OUTREACH PLAN.

Keeping education and outreach programs dynamic can help motivate employees to continue their waste reduction and recycling activities. While it helps to have a consistent logo and/or slogan to foster program recognition, adding fresh posters and outreach messages over time helps ensure that the program does not become stagnant.

Develop ideas now, and as the program matures, implement them over time. Examples include:

- **highlighting efforts of diligent recyclers**;
- **sending regular e-mail messages** (e.g., a weekly "environmental tip" or fact about the benefits of waste reduction and recycling);
- **showing a waste audit video** (if one was made while conducting a waste audit); and
- **boosting employee participation with incentives** such as:
  - **awarding prizes** to the divisions/floors with the highest participation or most material collected for a time period (e.g., month, quarter, year);
  - **donating any revenue gained** (at least during a certain period of time) to a local charity or employee social fund;
  - **holding internal recognition events** where awards are given;
  - **setting an office or building-wide goal** and providing rewards when it is met (e.g., a pizza party, gift certificates); and
  - **tracking progress with a highly visible display** (e.g., the large thermometers used for blood drives are a great example).

▶ DOCUMENT AND CONVEY PROGRAM SUCCESSES.

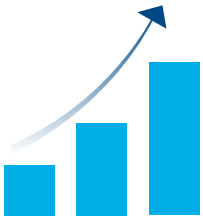
Be sure that program successes are documented and information regarding success is provided to upper management to show the importance of the program. Include how the successes relate to corporate sustainability goals and cost savings as well as Green Team and corporate goals and mission statements.

▶ CONSIDER EXPANDING THE PROGRAM.

Consider focusing on other environmental issues, such as energy conservation and purchasing recycled-content products.

Because buying items made from recycled material is considered the third step in the recycling loop (after collecting/processing and manufacturing goods from recycled material), an environmentally preferred purchasing program is a natural outgrowth to a waste reduction and recycling program.

STEP 9 | REPORT EFFORTS.



It's smart business to recycle. It's also smart business to report your recycling activities.

Reporting is easy. Keep track of what and how much you recycle so you can report your recycling efforts. Keeping track of how much material is collected allows you to report back to upper management and employees the success of their efforts.

In addition, reporting to your county recycling coordinator allows the state to measure how much material was kept out of landfills. This reporting is done on a fiscal year basis – July 1 through June 30 of each year. South Carolina has a goal to recycle 35 percent of its municipal solid waste.

▶ RETRACCONNECT IS THE ANSWER.

The S.C. Smart Business Recycling Program offers a FREE and CONFIDENTIAL online reporting system called ReTRACConnect that allows businesses to efficiently track their recycling and solid waste management efforts. Organizations also can track disposal costs and revenue generated from the sale of recyclables. In addition, businesses are able to create reports including an environmental benefits report based on their recycling activities.

Visit **www.scdhec.gov/smartbusiness** for more information. Businesses are strongly encouraged to report the amount of material they recycle each fiscal year.

WHAT'S THE DIFFERENCE?

What is the difference between municipal solid waste (MSW) and processing/manufacturing waste from business and industry?

- **MSW (OFFICE OR PACKAGING MATERIAL):** This includes traditional office recycling programs (e.g., office paper, cardboard, aluminum cans, water bottles). If a business or industry recycles the package a raw material comes in or is stacked upon, the package also is considered MSW. As a general rule, material included in this category are those items that do not enter the manufacturing process.
- **PROCESSING OR MANUFACTURING WASTE (SCRAP OR BY-PRODUCT):** This process waste is any material used in processing or manufacturing operations or material/by-product resulting from such operations that do not reach the intended end user of the product being manufactured, even if the by-product/material is put back into the manufacturing process, sold/sent off-site for use as-is or in another process, or re-used.

▶ SLIGHTLY NORTH OF BROAD ...

... (or SNOB) in Charleston has incorporated recycling into its staff's daily routine, sharing with employees the volume of material that is being recycled.

Currently, SNOB recycles aluminum, steel cans, glass, paper, cardboard, plastic and batteries.

SPOTLIGHT BUSINESS

Several steps have been taken to reduce waste from the kitchen to the table as well as conserving energy through saver settings on electronic equipment. Whenever possible, the restaurant buys environmentally friendly products including compostable to-go containers as well as recycled-content notepads, copy paper and paper towels.

WORKSHEET A | WASTE COMPONENTS IDENTIFIED IN FACILITY WALK-THROUGH

Use this worksheet to identify and record the types of waste produced, the areas of generation and potential waste reduction and recycling strategies. In some cases, a walk-through may indicate that an existing recycling program is not being fully utilized.

The information needed to complete this worksheet can be obtained by conducting a walk-through of targeted functional areas of your facility, looking carefully at contents in waste containers as well as interviewing supervisors and employees. Certain areas tend to generate large amounts of waste, such as shipping and receiving, copy rooms, cafeterias, assembly lines and offices. Also, review the grounds maintenance activities.

Be sure that you have contacted department managers to inform them of the walk-through and that they support staff being interviewed. Consider interviewing housekeeping staff. Information will be most complete if you conduct the walk-through just before containers are emptied. Avoid conducting the walk-through when unusual activities are taking place or during unusually slow or busy times.

MATERIAL	IN THE WASTE STREAM?	ESTIMATED PERCENT OF WASTE STREAM	AREAS OF GENERATION	POTENTIAL WASTE REDUCTION AND RECYCLING STRATEGIES
PAPER				
Green bar computer paper	❑ Yes ❑ No			
White ledger paper	❑ Yes ❑ No			
White form-feed paper	❑ Yes ❑ No			
White copy paper	❑ Yes ❑ No			
White ledger pads	❑ Yes ❑ No			
Cash register receipts	❑ Yes ❑ No			
Adding machine tape	❑ Yes ❑ No			
Envelopes	❑ Yes ❑ No			
Windowed envelopes	❑ Yes ❑ No			
Colored paper	❑ Yes ❑ No			
Yellow legal pads	❑ Yes ❑ No			
Letterhead	❑ Yes ❑ No			
Message pads	❑ Yes ❑ No			
Newspapers	❑ Yes ❑ No			
Magazines	❑ Yes ❑ No			
Corrugated cardboard	❑ Yes ❑ No			
Cardboard tubes	❑ Yes ❑ No			
Mixed waste paper	❑ Yes ❑ No			
Unwanted mail	❑ Yes ❑ No			
Coated stock	❑ Yes ❑ No			
Stick-on notes	❑ Yes ❑ No			
Paperboard (e.g., cereal boxes)	❑ Yes ❑ No			
Paper plates/cups	❑ Yes ❑ No			
Napkins/towels	❑ Yes ❑ No			

MATERIAL	IN THE WASTE STREAM?	ESTIMATED PERCENT OF WASTE STREAM	AREAS OF GENERATION	POTENTIAL WASTE REDUCTION AND RECYCLING STRATEGIES
PAPER (continued)				
Tissue paper	❑ Yes ❑ No			
Wax-coated paper	❑ Yes ❑ No			
Plastic-coated paper	❑ Yes ❑ No			
Carbon paper	❑ Yes ❑ No			
Other paper	❑ Yes ❑ No			
PLASTIC				
#1 PET (e.g., soda bottles)	❑ Yes ❑ No			
#2 HDPE bottles (e.g., milk jugs)	❑ Yes ❑ No			
#2 HDPE film	❑ Yes ❑ No			
#3 Vinyl bottles, pipe, siding	❑ Yes ❑ No			
#4 LDPE film	❑ Yes ❑ No			
#5 Polypropylene	❑ Yes ❑ No			
#6 Polystyrene foam	❑ Yes ❑ No			
#6 Rigid polystyrene	❑ Yes ❑ No			
Other plastic	❑ Yes ❑ No			
METAL				
Aluminum cans	❑ Yes ❑ No			
Aluminum foil	❑ Yes ❑ No			
Other aluminum (e.g., rain gutters, etc.)	❑ Yes ❑ No			
Steel cans	❑ Yes ❑ No			
Other ferrous metals	❑ Yes ❑ No			
Other metals	❑ Yes ❑ No			
GLASS				
Brown	❑ Yes ❑ No			
Clear	❑ Yes ❑ No			
Green	❑ Yes ❑ No			
Other glass	❑ Yes ❑ No			
LIGHTING				
Fluorescent bulbs	❑ Yes ❑ No			
Incandescent bulbs	❑ Yes ❑ No			
Other lighting	❑ Yes ❑ No			
FOOD SCRAPS				
Baked goods	❑ Yes ❑ No			
Cooking oil	❑ Yes ❑ No			
Fruit/vegetable scraps	❑ Yes ❑ No			

Continued on the following page

MATERIAL	IN THE WASTE STREAM?	ESTIMATED PERCENT OF WASTE STREAM	AREAS OF GENERATION	POTENTIAL WASTE REDUCTION AND RECYCLING STRATEGIES
FOOD SCRAPS (continued)				
Grease	❑ Yes ❑ No			
Meat scraps	❑ Yes ❑ No			
Other food scraps	❑ Yes ❑ No			
WOOD				
Lumber	❑ Yes ❑ No			
Crates	❑ Yes ❑ No			
Pallets	❑ Yes ❑ No			
Land-clearing debris	❑ Yes ❑ No			
Other wood	❑ Yes ❑ No			
YARD TRIMMINGS				
Grass clippings	❑ Yes ❑ No			
Leaves and brush	❑ Yes ❑ No			
AUTOMOTIVE ITEMS				
Lead-acid batteries	❑ Yes ❑ No			
Used motor oil	❑ Yes ❑ No			
Used oil filters	❑ Yes ❑ No			
Used antifreeze	❑ Yes ❑ No			
Scrap tires	❑ Yes ❑ No			
Other automotive items	❑ Yes ❑ No			
MISCELLANEOUS ITEMS				
Furniture	❑ Yes ❑ No			
Linens/towels	❑ Yes ❑ No			
Mattresses	❑ Yes ❑ No			
Rechargeable batteries	❑ Yes ❑ No			
Appliances	❑ Yes ❑ No			
Electronics	❑ Yes ❑ No			
Toner/inkjet cartridges	❑ Yes ❑ No			
OTHER MATERIAL				
	_____			
	_____			
	_____			
	_____			
	_____			
	_____			
	_____			
	_____			
	_____			

WORKSHEET B | RECORDS REVIEW: ESTIMATING CURRENT WASTE MANAGEMENT COSTS

Use this worksheet to record information about how solid waste is removed from your facility and to help estimate the total annual cost of waste management services. Company records (e.g., hauling contracts, maintenance, operating logs, invoices, waste removal records) will be the primary sources of information needed to complete this information. Maintenance staff also may be able to provide information.

Waste removal costs can be charged via a flat fee or a per pull charge, which is levied each time a container is hauled or emptied. There also can be container rental and maintenance fees (charged monthly, quarterly or annually). In addition, some haulers charge a disposal fee based on the weight of trash delivered to the disposal site. This worksheet is designed to capture all of those costs. If waste removal practices vary significantly among buildings or if different waste contractors are used, make copies and record the information separately for each building or service provider.

FACILITY INFORMATION	
Building:	Department:
Name of Contact:	
Telephone Number:	E-mail:

WASTE HAULING AND DISPOSAL COSTS				
PART A: Hauler Contact Information				
Name of Hauler:			Contact:	
Telephone Number:			E-mail:	
Contract Expires:				
PART B: Containers and Removal Schedule				
container	**TYPE** (dumpster/roll-off, compactor)	**SIZE**	**FREQUENCY OF COLLECTION** (number per day/week/month)	**DAY(S) OF WEEK COLLECTED** (or upon request)
1				
2				
3				
4				
5				

PART C: Waste Management Charge: (if charged as flat fee or part of rent)

$_____ (waste removal fee) X _____ (number of times per year) = $_____ (annual waste management charge)

PART D: Waste Management Charge by Weight or Volume: Indicate the total and/or per-container per-unit waste hauling fee if you are charged a fee by weight and volume.

container	PER-UNIT TRASH HAULING FEE	X	UNIT OF WEIGHT OR VOLUME	X	ANNUAL UNITS	=	TOTAL CHARGE
1		X		X		=	$
2		X		X		=	$
3		X		X		=	$
4		X		X		=	$
5		X		X		=	$

Continued on the following page

PART E: Waste Removal Charge: If charged per pull, indicate the total and/or per-container pull fee.					
container	**PER-PULL FEE**	X	**NUMBER OF PULLS PER YEAR**	=	**TOTAL ANNUAL PULL FEES**
1		X		=	$
2		X		=	$
3		X		=	$
4		X		=	$
5		X		=	$

PART F: Container Rental and/or Maintenance Fees: If applicable, indicate the per-container and/or total container rental/maintenance fees per year.					
container	**MONTHLY OR QUARTERLY RENTAL MAINTENANCE FEE**	X	**ANNUALIZATION MULTIPLIER** (12 if monthly fee or 4 if quarterly fee)	=	**TOTAL ANNUAL MAINTENANCE RENTAL FEES**
1		X		=	$
2		X		=	$
3		X		=	$
4		X		=	$
5		X		=	$
TOTAL ANNUAL FEES		X		=	$

PART G: Waste Disposal Fee: (if charged separately for disposal)					
$_____ charge per ton (or cubic yards – CY)		X	_____ tons (of CY) per year	=	$_____ total annual disposal fee

PART H: Total Waste Management Costs Per Year	
Sum of Applicable Annual Charges and Fees (Parts C through G):	$

WORKSHEET C | CONDUCTING A WASTE AUDIT

Use this worksheet if you need a more detailed profile of the amounts and types of waste generated at your facility than a records review and/or facility walk-through can provide.

When conducting a waste audit (also known as a waste sort), you can either choose to collect all waste generated during the day or select a representative sample of about 50 pounds from each collection container (e.g., dumpster). This is more appropriate for larger companies. Some companies may choose to conduct a visual audit instead, estimating the amount of specific types of material in each container.

Determine the size and location of the area in which you will sort the waste. If large quantities of waste will be sorted, a large, flat area such as a parking area works well. It may be possible to use large indoor rooms for smaller waste sorts. Obtain building management approval and work with them to conduct the waste audit when it will cause the least disruption – likely after work hours. A team of three or four is usually adequate for a small- to medium-sized facility. Expect the waste audit to take a few hours.

MATERIALS NEEDED:

- **Broom/shovel**
- **Camera** (digital or video)
- **Cardboard boxes**
- **Clipboard**
- **Dustpan**
- **First aid kit**
- **Pens and/or markers**
- **Trash bags** (plastic)
- **Rubber gloves**
- **Scale**
- **A copy of this worksheet**
- **Plastic sheeting/drop cloth**

***REMEMBER** to wear old clothes, long pants, long sleeves and closed shoes.*

1. BEGIN THE WASTE AUDIT.

A. Assemble the waste to be sorted, using either one day's worth of waste or an otherwise representative sample of waste from your facility.

B. Weigh the empty containers that the sorted waste will be placed into and record these weights on a label on each container.

C. Sort the waste sample by major material type categories (paper, plastic, glass, metal, compostable organics, other)

D. If needed, further sort each major material types into more specific component subcategories (e.g., glass could be sorted into clear, green, brown or other)

E. Place the sorted materials into separate labeled containers.

2. CALCULATE THE NET MATERIAL CATEGORY WEIGHTS.

A. Weigh each filled waste container and subtract the weight of the container to obtain the net material type weight. Record the net material type weight on the space provided on the Waste Audit Form, column A (beginning on page 23). If you are not sorting into more detailed material subcategories, proceed to Step 2-C.

B. If you sorted the material types into subcategories, add their net weights and record the total net material weights on the Waste Audit Form.

C. Add all the total material type weight figures to determine the total sample weight and record this

Continued on the following page

total at the bottom of the Waste Audit Form.

3. CALCULATE THE PERCENT TO TOTAL SAMPLE WEIGHT.

A. Use this formula to calculate the percentage each material type represents of the total sample weight.

_____	÷	_____ X 100	=	_____%
net material type weight		total sample weight		percent of total sample weight

B. Record data in column B on Waste Audit Form. Use the data in the Percent of Total Sample Weight column to create a pie chart to help compare the percentages of the different material types in the waste stream.

4. ESTIMATE TOTAL ANNUAL WASTE GENERATION BY MATERIAL TYPE.

A. If you sorted one (typical) day's worth of waste, estimate the weight of waste generated for each material type annually using the following formula.

_____	X	_____	=	_____
net material type weight		number of working days per year		weight of material generated annually

B. If you sorted a representative sample, first weigh or estimate all the waste generated by your company that day. Calculate the amount of waste generated annually for each material type by using the following formulas.

_____	÷	_____	=	_____
total sample weight (all types)		total waste amount generated per day		sort multiplier

_____	÷	_____	X	_____	=	_____
net material type weight		sort multiplier		number of working days per year		annual weight of material

C. Repeat the appropriate calculation (A or B) for each material type and record on Waste Audit Form, Column C. Note, this process does not include any materials currently being recycled. The intent is to focus on identifying waste streams currently being disposed of in landfills. If your company wants to know the total tons generated, add in the quantity of any materials known to be recycled per year.

▶ WASTE AUDIT FORM

AUDIT SPECIFICS		
Date of Audit:	Department(s):	
Source of Sample:		
Sample Collected (specify weight): ❑ All Waste ❑ Representative Sample		POUNDS
Total Weight of Waste Generated on Audit Date:		POUNDS
Team Members Conducting the Audit:		
Factors Affecting the Audit:		

MATERIAL	COLUMN A Net Material Type Weight	COLUMN B Percent of Total Sample Weight (All Material Types)	COLUMN C Weight of Material Type Generated Annually
PAPER			
Green bar computer paper			
White ledger paper			
White form-feed paper			
White copy paper			
White ledger pads			
Cash register receipts			
Adding machine tape			
Envelopes			
Windowed envelopes			
Colored paper			
Yellow legal pads			
Letterhead			
Message pads			
Newspapers			
Magazines			
Corrugated cardboard			
Cardboard tubes			
Mixed waste paper			
Unwanted mail			

Continued on the following page

MATERIAL	COLUMN A Net Material Type Weight	COLUMN B Percent of Total Sample Weight (All Material Types)	COLUMN C Weight of Material Type Generated Annually
Coated stock			
Stick-on notes			
Paperboard (e.g., cereal boxes)			
Paper plates/cups			
PAPER (continued)			
Napkins/towels			
Tissue paper			
Wax-coated paper			
Plastic-coated paper			
Carbon paper			
Other paper			
PLASTIC			
#1 PET (e.g., soda bottles)			
#2 HDPE bottles (e.g., milk jugs)			
#2 HDPE film			
#3 Vinyl bottles, pipe, siding			
#4 LDPE film			
#5 Polypropylene			
#6 Polystyrene foam			
#6 Rigid polystyrene			
Other plastic			
METAL			
Aluminum cans			
Aluminum foil			
Other aluminum (rain gutters, etc.)			
Steel cans			
Other ferrous metals			
Other metals			
GLASS			
Brown			
Clear			
Green			
Other			
LIGHTING			
Fluorescent bulbs			
Incandescent bulbs			
FOOD SCRAPS			
Baked goods			
Cooking oil			

MATERIAL	COLUMN A Net Material Type Weight	COLUMN B Percent of Total Sample Weight (All Material Types)	COLUMN C Weight of Material Type Generated Annually
Fruit/vegetable scraps			
Grease			
Meat scraps			
Other food scraps			
WOOD			
Lumber			
Crates			
Pallets			
Land-clearing debris			
Other wood			
YARD TRIMMINGS			
Grass clippings			
Leaves and brush			
AUTOMOTIVE ITEMS			
Lead-acid batteries			
Used motor oil			
Used oil filters			
Used antifreeze			
Scrap tires			
Other automotive items			
MISCELLANEOUS ITEMS			
Furniture			
Linens/towels			
Mattresses			
Rechargeable batteries			
Appliances			
Electronics			
Toner/inkjet cartridges			
OTHER MATERIAL			

WORKSHEET D | CALCULATING AVOIDED DISPOSAL COSTS AND NET COSTS OF A RECYCLING PROGRAM

By implementing a waste reduction or recycling program, a company can potentially realize savings and/or revenues due to:

- **reduced trash collection and disposal costs**;
- **reduced purchasing costs for materials that are no longer needed** (e.g., disposable cups, plates, mugs, new toner cartridges); and
- **revenues from the sale of recyclables**.

There can be, at times, a cost for implementing waste reduction and recycling programs. For example, recycling is considered to be a service and collectors are paid to provide this service. Most often, however, it is less costly than garbage collection. In addition, waste reduction measures like switching to reusable cups, mugs and plates cost money in terms of electricity and water (running a dishwasher), as well as the initial cost of the reusable items.

This worksheet helps identify cost savings as well as additional expenditures associated with waste reduction and recycling programs to estimate the net costs or savings that can be expected due to implementing a waste reduction/recycling program.

Much of the information needed to complete this form is derived from Worksheet B "Records Review: Estimating Current Waste Management Costs," Worksheet C "Conducting a Waste Audit" and Worksheet E "Interviewing Recycling Service Providers," as well as from purchasing records and hauler reports. You may wish to fill out a separate worksheet for each material type or category of materials being targeted for recycling or source reduction if you are trying to compare the cost differences between potential programs. Otherwise, combine material on one worksheet.

Because it is nearly impossible to have 100 percent diversion due to contamination and employee participation, the calculations estimating the amount of waste to be diverted use a conservative assumption that 70 percent of the targeted material will be recycled/source reduced.

The worksheet is arranged as follows:

- **PART 1: Estimating Potential Reduction in Garbage Collection/Disposal Costs**;
- **PART 2: Estimating Reduced Purchasing Costs and Potential Revenues**;
- **PART 3: Estimating Recycling and Waste Reduction Program Costs**; and
- **PART 4: Estimating Net Costs (Savings)**.

PART 1: Estimating Potential Reduction in Garbage Collection/Disposal Costs (Refer to Worksheet C, "Conducting a Waste Audit," for this information.)

A. BY VOLUME: Use this formula if you performed a visual audit of the waste stream or if you calculated volumes during a waste audit.

_____ percent of waste stream comprised of target material	X	_____ total cubic yards (CY) disposed of annually	=	_____ CY targeted for diversion
_____ CY targeted for diversion	X	.70	=	_____ CY expected for diversion
_____ CY expected for diversion	÷	_____ CY total volume of disposed waste	=	_____% percent of waste stream expected to be diverted

B. BY WEIGHT: Use this formula if you calculated weight in the waste sort and if your hauler will provide disposal weights for your dumpster(s).

_____ pounds of targeted material disposed of per year	X	.70	=	_____ pounds expected for diversion per year
_____ pounds expected for diversion per year	÷	_____ total weight of waste disposed of (from hauler) per year	=	_____% total expected annual diversion rate

C. ESTIMATED TOTAL ANNUAL COSTS SAVED ON WASTE COLLECTION/DISPOSAL: Businesses are often able to save money by reducing the number of times per week the dumpster(s) are emptied, reducing the size or number of dumpsters and/or by reducing disposal fees, if applicable. Ask your waste hauler if disposal costs can be reduced if your business reaches its expected diversion. Identify potential cost savings by category. To develop a rough estimate of potential cost savings, use the following calculation.

_____	÷	_____ %	=	_____
annual waste management costs for disposed of waste (see Worksheet B)		expected diversion rate		potential annual cost savings

NOTE: Potential annual cost savings estimated using the formula above will likely overstate cost savings somewhat. Speaking with your hauler about your options will provide you with the most accurate estimate. Reducing the number of pulls/times per week the dumpster(s) is/are emptied will yield a more significant cost savings than simply reducing the size of your containers. Be mindful, however, that it is important to ensure: waste is collected as often as necessary to avoid odor and vectors; and that waste collection containers and pull schedule accommodate a businesses' peak times of operation.

PART 2: Estimating Reduced Purchasing Costs and Potential Revenues

As mentioned earlier, waste reduction and recycling programs can result in reduced costs. In addition, you may be able to earn revenue from the sale of recyclables. This part of the worksheet helps to estimate reduced purchasing costs and potential revenue associated with your program.

- **AVOIDED PURCHASING COSTS:** In some cases, purchasing costs can be avoided due to waste minimization efforts being implemented. For example, switching to reusable plates, coffee cups or utensils can mean that less of the disposable items are purchased in the first place, refilling toner cartridges can be less costly than purchasing new ones and implementing a double-sided print policy can reduce the amount of paper purchased.
- **REVENUE SHARES:** Some recyclers will provide businesses with revenue for some of their recovered materials. Ask potential service providers about earning revenue and estimate the revenue earned per material type. Worksheet E provides a form to use for interviewing recyclers and recording such information.
- **SUMMARY OF COST SAVINGS/REVENUES BY TARGETED MATERIAL TYPES:** Fill in the information in the table below for each material type targeted, then add together the estimated annual cost savings and revenue for all material types to find the total estimated cost savings plus revenues.

WASTE REDUCTION OR RECYCLING ACTIVITY	WASTE MATERIAL BEING REDUCED	AMOUNT OF WASTE REDUCED PER YEAR	ANNUAL WASTE REMOVAL COST AVOIDED (i)	ANNUAL REDUCTION IN PURCHASING COSTS (ii)	ESTIMATED ANNUAL REVENUES FROM MATERIAL (iii)	ESTIMATED ANNUAL COST SAVINGS & REVENUE (i+ii+iii)
EXAMPLE: Replace paper plates with dishes in the cafeteria.	Paper plates	5 CY per week; 260 CY per year	Average of $3 per CY, or $780 per year	$75 per week; $3,900 per year	$0.00	$4,680
TOTAL ESTIMATED COST SAVINGS & REVENUES						

Continued on the following page

PART 3: Estimating Recycling and Waste Reduction Program Costs

Many recycling services are provided at a cost to the business. Therefore, these costs also should be estimated to help develop a realistic expectation of net costs of the program.

Below, identify and record estimated annual costs associated with the program. Although there is a line for additional labor, in many cases businesses are able to implement a program with no additional labor costs.

A. Estimated Annual Costs of the Recycling Program	
Additional labor	$
Additional Energy Requirements	$
Additional Estimated Collection Service	$
Additional Estimated Container Rental/Maintenance	$
Additional Space Required	$
Education/Promotion	$
Recordkeeping	$
Equipment Supplies (e.g., baler wire, if required)	$
Equipment Maintenance (if required)	$
Other	$
Other	$
B. Recycling Start-up Costs (amortized annually)	
Containers	$
Equipment (e.g., balers, compactors, if required)	$
Signage	$
Other	$
Other	$
C. Estimated Costs of Waste Reduction Activities	
Equipment	$
Required Materials/Goods	$
Additional Electricity	$
Additional Water	$
Additional Labor	$
Other	$
Other	$
D. Sum of All Annual Costs (Part 3 A, B and C):	$

PART 4: Estimating Net Costs (Savings)

Estimate total net program costs (savings) by the following:

$_____	—	$_____	=	$_____
total estimated cost savings/revenues (Part 2, C)		total program costs (Part 3, D)		estimated net savings

WORKSHEET E | INTERVIEWING RECYCLING SERVICE PROVIDERS

When looking into starting or improving a recycling program, it is important to research services provided by different recyclers. This worksheet provides a format for organizing information collected while you are researching options. Also, remember that you may be able to negotiate with the service providers, particularly in situations where several service providers operate in the area.

It is important to ensure that storage/collection containers will fit in areas available and will provide ample room for loading/unloading. Most haulers that collect recyclables also collect trash – and do so under the same contract – so you will likely be asking about both recyclables and trash collection services. If your business requires a compactor, be sure to convey that.

In addition to interviewing potential haulers for recycled materials, it is important to understand your current waste hauling contracts, ability to reduce waste container sizes/number of pulls and length of contract. In general, it is recommended that a written contract be developed instead of a verbal agreement. Be certain that the language in the contract is in agreement with your understanding of the services and fees provided.

SERVICES	RECYCLER #1	RECYCLER #2	RECYCLER #3
NAMES			
Materials collected include: • PAPER GRADE; • METAL; • PLASTIC; and • OTHER MATERIAL.			
Is there a minimum VOLUME or WEIGHT REQUIREMENT for collection?			
Is there a FREQUENCY OF COLLECTION SCHEDULE or are ON-CALL SERVICES provided?			
What are the FEES CHARGED for collection of recycling and waste containers?			
What is the FEE FOR MATERIAL PROCESSING or disposal (if applicable)?			
What are the PRICES PAID for materials? (If applicable, indicate material types, how they are sorted and whether loose/baled, etc. and associated revenues per ton.)			
Must recyclables be SEPARATED or can they be MIXED/ COMMINGLED?			

Continued on the following page

SERVICES	RECYCLER #1	RECYCLER #2	RECYCLER #3
NAMES			
What are the CONTAINER SIZES AND TYPES AVAILABLE? (Are indoor and/or outdoor containers provided?)			
What are the CONTAINER RENTAL AND/OR MAINTENANCE FEES? (Do they differ for trash and recyclables?)			
Are MONTHLY REPORTS provided showing the tonnages or cubic yards recycled and disposed of?			
Is a BALER PROVIDED for corrugated cardboard or other materials? Is a FEE CHARGED for providing one?			
Is TRAINING PROVIDED? Is a FEE CHARGED for this service?			
Is help PROVIDED TO DESIGN a recycling program and/or conduct a walk-through of the facility? Is a FEE CHARGED for this service?			
What ability/experience is available in providing EDUCATIONAL MATERIALS? What is the COST of this material?			
Can CONTAINER SIZES be “changed out” during the contract? Is a FEE CHARGED for doing so?			
HOW MANY YEARS has this company been in business?			
REFERENCES			

ADDITIONAL RESOURCES

S.C. Green Hospitality Program

The S.C. Department of Health and Environmental Control's (DHEC) Green Hospitality Program is a free, voluntary program designed to: 1) help South Carolina's hospitality industry reduce the environmental impact of its operations and incorporate environmental stewardship and sustainability in its business practices; and 2) promote and recognize hotels, restaurants and other hospitality facilities for their environmentally conscious practices.

The program -- offered by DHEC's Office of Solid Waste Reduction and Recycling -- provides free, confidential, non-regulatory technical assistance to help facilities begin or expand green practices such as: waste reduction, recycling and composting; energy and water conservation; green cleaning; and environmentally preferred purchasing.

Sustainability Index for South Carolina Industries

The Sustainability Index for South Carolina Industries (Index) provides information about recyclers (both in and out-of-state) by type of material. The Index may be used to locate:

- **users of your by-products**;
- **equipment to help minimize your waste**;
- **services to help your environmental program**; and
- **substitutes for hazardous materials**.

To view the Index, visit **www.scdhec.gov/environment/admin/CES/cesindex.htm**.

S.C. Materials Exchange

The S.C. Materials Exchange (SCME) is a free service that seeks to reduce waste by facilitating the exchange of reusable material by businesses, non-profit institutions and government. The SCME serves as a "matchmaking service" that provides users access to information on material available or wanted. The benefits of using a materials exchange may include:

- **finding valuable material for free** or less than the cost of new material;
- **reducing waste disposal costs**;
- **selling surplus material for profit**;
- **conserving natural resources**; and
- **demonstrating your environmental responsibility** to others.

Visit the SCME at **www.scdhec.gov/scme**.

S.C. Recycling Markets Directory

The S.C. Recycling Markets Directory (SCRMD) is an online searchable database of companies involved in the recycling industry in South Carolina. Companies listed in this database include processors, haulers, brokers, remanufacturers, collectors and various other recycling market participants.

The SCRMD provides a convenient way for companies, individuals and local governments to access pertinent information about organizations involved in the recycling industry. Users can search through the database in several ways. They may either enter the company name or commodity type that they are interested in finding. Users also may select specific material, counties or business services provided (i.e. processor).

New companies are frequently being added to the SCRMD. If you have questions about a listing, need information updated or want your S.C. recycling-related business included, please **call (803) 737-0400.**

Visit the SCRMD at **http://sccommerce.com/existing-sc-business/recycling-market-development/recycling-markets-directory**.

S.C. Smart Business Recycling Program Recognition and Awards

Each year, the S.C. Smart Business Recycling Program recognizes businesses, non-profits, institutions and other organizations in South Carolina that recycle and then report their recycling activities.

Award presentations are made each April at the various facilities. For more information, call **1-800-768-7348** or visit **www.scdhec.gov/environment/lwm/recycle/smart_business/awards.htm**.

S.C. Green Building Directory

The S.C. Green Building Directory (SCGBD) is an easy to use, go-to resource for those interested in access to tools for green building in South Carolina. The goal of the SCGBD is to provide users with information they need to find products and services that support green building practices for new construction or remodeling of residential and commercial facilities in South Carolina. It also is a useful resource for those within the southeastern United States and beyond.

Visit **www.scgreenbuildingdirectory.org** for more information.

S.C. Environmental Excellence Program

The S.C. Environmental Excellence Program (SCEEP) is a voluntary program for companies committed to continuous environmental improvement in order to protect and preserve South Carolina's environment. Its purpose is to encourage companies to become environmental leaders by making a voluntary commitment to promote and practice pollution prevention, energy and other resource conservation, and to strive for continuous environmental improvement.

Any South Carolina organization, company or facility committed to reducing its waste streams through pollution prevention activities, and/or through reducing energy or other resource consumption with the goal of improving South Carolina's environment is eligible to participate. A "facility" is defined to mean any site, manufacturing or natural resource management operation, or any business or municipal activity that is regulated under any provision of the state's environmental laws.

Participation in SCEEP provides the following benefits:

- **public recognition among customers, business associates, the community and the state's regulatory agencie**s that your company or facility is committed to environmental leadership;
- **participation in and membership on the S.C. Environmental Excellence Council** which provides networking opportunities with other members, and forums to discuss regulatory issues and to exchange ideas;
- **access to DHEC senior leadership**;
- **opportunities for regulatory flexibility** on identified issues;
- **eligibility for awards** such as the S.C. Energy Office special energy conservation awards;
- **opportunities for other environmental activities** including corporate mentoring, technology transfer assistance and information exchanges; and
- **use of the SCEEP logo**.

Visit **www.scdhec.gov/environment/admin/CWM/SCEEP/index.htm** for more information.

WasteWise

WasteWise is a program offered by the U.S. Environmental Protection Agency (EPA). It's free, voluntary and allows you to set your own waste reduction and recycling goals. It's also a great way for your business to gain national recognition for your efforts.

Organizations can join WasteWise to make a difference, either as a partner, endorser or both. Partners join to change their own behavior and track their own internal waste reduction efforts, while endorsers are state and local government agencies, trade associations, nonprofit organizations and businesses that help their members, clients and constituents realize that reducing solid waste makes good business sense. WasteWise, launched in 1994, has more than 2,700 members.

The benefits of joining WasteWise include:

- **free technical assistance**;
- access to web-based **data management tracking tool** (WasteWise Re-TRAC);
- **the opportunity to receive WasteWise Awards** that recognize outstanding achievements;
- **public recognition in WasteWise publications, case studies and meetings**;
- **access to its annual Climate Profile** describing greenhouse gas reduction;
- **reduced purchasing and waste disposal costs**; and
- **outreach and educational materials**.

Visit **www.epa.gov/wastewise** for more information about WasteWise**.**

South Carolina
Smart Business Recycling Program

This guide is part of the **S.C. Smart Business Program** (Smart Business) – a technical assistance effort provided by the S.C. Department of Health and Environmental Control's (DHEC) Office of Solid Waste Reduction and Recycling.

For information about Smart Business and other recycling programs in South Carolina, call **1-800-768-7348**, e-mail **smartbiz@dhec.sc.gov** or visit **www.scdhec.gov/smartbusiness** and **www.scdhec.gov/recycle**.

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